

RF magnetron
substrate Si (111)
Si (100)
FeSi₂

PATENT ABSTRACTS OF JAPAN

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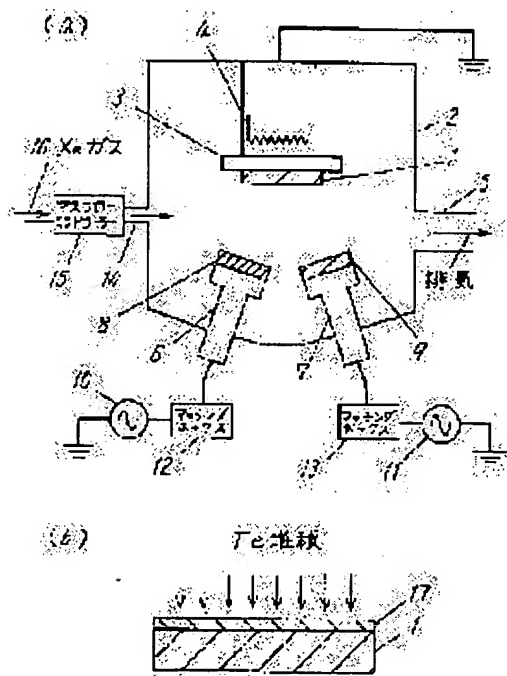
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(54) THIN FILM FORMATION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a film forming method for forming a high quality β -FeSi₂ epitaxial layer on an Si-substrate.

SOLUTION: A β -FeSi₂ layer 17 is formed by arranging an n-type Si-substrate 1 of the (100) plane on a substrate holder 3 provided in a vacuum chamber 2 of a magnetron sputtering device and then depositing Fe on the Si-substrate 1 by sputtering using gaseous Xe as the sputtering gas while heating the substrate so as to keep its temp. at 550 to 650°C. Gaseous Xe has large mass in comparison with gaseous Ar being generally used in sputtering. Therefore, when Fe is deposited by sputtering, the dissociation of the Si-Si bond at the surface of the Si-substrate proceeds efficiently, and the reaction of Si and deposited Fe is accelerated by exposing the surface of the Si-substrate to the plasma gas of Xe, thereby the high quality β -FeSi₂ epitaxial layer can be formed.



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